Texas also contributed much of the Hispanic net in-migration during the 1975-80 period (see Figure III). While receiving net in-migration from California, that state was also the destination of nearly one-half of the Hispanics who left Arizona.

In addition to the in-migration of Hispanics from other states, a large proportion of the immigrants from other countries between 1975 and 1980 were of Hispanic origin. These immigrants to Arizona totalled 14,800 people, one-third of the state's Hispanic in-migration.

The Phoenix metropolitan area was the destination of many Hispanic in-migrants during the 1975-80 period, including 40 percent of those from other countries. However, one-third of the Hispanic in-migrants to Arizona settled in rural counties, compared to just 12 percent of all in-migrants. Among the rural counties, Yuma and Cochise received the greatest number of these Hispanics. Yuma County, in particular, assimilated a large number of Hispanic immigrants from other countries, nearly as many as Pima County received.

MIGRATION WITHIN ARIZONA

Many Arizona residents moved from one county to another between 1975 and 1980. Yavapai County, with net in-migration of 3,800 Arizona residents, led this intrastate migration (see Table 1), while Maricopa County lost the greatest number of inhabitants to other Arizona counties — nearly 4,000 people. Cochise County experienced net out-migration of more than 3,200 people. Only two counties, Greenlee and Santa Cruz, lost residents both to other Arizona counties and to other states. In addition, Apache and Gila counties each lost more people in total than they gained.

Nearly 8,000 senior citizens moved from one Arizona county to another between 1975 and 1980. Yavapai County was the greatest beneficiary of this movement, gaining a net of 583 senior citizens from other counties. Maricopa County lost 475 more senior citizens than it gained, with most of the out-migrants moving to Yavapai and Gila counties — probably to the towns of Prescott and Payson.

CHANGING MIGRATION PATTERNS

Migration patterns are not necessarily consistent over time, since they are affected both by national economic conditions and by local circumstances. Migration generally slows during economic recessions and surges during booms. Since the 1980 census, the national economy has experienced both extremes; migration flows to Arizona were very slow during the 1980-82 recessions but reached record levels during the 1984 boom.

During both 1981 and 1982, Arizona's net population inflow was estimated at less than 75,000. With gains in other Sunbelt states comparably low during that period, some analysts prematurely concluded that the Sunbelt was losing its allure. Arizona's record population gain of approximately 130,000 during 1984 revealed that the supposed slowing of migration to the Sunbelt was only a temporary, economy-related situation.

Changes in a local area can also affect national patterns of migration. For example, the Texas economy boomed during the late 1970s, due largely to the oil industry; net in-migration to Texas totaled 574,000 people — 2.3 times Arizona's net increase. But with the oil slump of the 1980s, some areas of Texas have lost population. Arizona's record population gain in 1984 probably resulted, in part, from the circumstances in Texas. Arizona may now be receiving a net inflow of people from Texas, as well as greeting people from other states who previously would have moved to Texas.

California's migration patterns provide another example of changing conditions. The total number of in-migrants to California hardly changed between the late 1950s and the late 1970s. However, the number of people moving out of California more than doubled during this period. California was transformed from a boom state to one that was growing primarily because of net natural increases. Thus, while people keep streaming to California from eastern states, an ever-growing number of residents have apparently become dissatisfied with living conditions, leaving California in favor of other western states.

The basic pattern of migration from the East to the West has endured for decades and seems likely to continue, the magnitude fluctuating with the economic cycle. The share of this migration received by each western state has varied, however, as has the movement from state to state within the West. Thus, while continued population advances in Arizona seem assured, the exact size of future gains is less certain.

— Timothy D. Hogan

— Tom R. Rex
Research Manager

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"Forecast," from page 1

accompanied the slowdown in real GNP.

The Federal Reserve responded more forcefully to this news than most analysts had expected. The Fed had loosened monetary policy last fall, causing interest rates to fall and economic growth to accelerate. Early this year, they announced they would loosen no further, given that the money supply was expanding at rates higher than the target range and that satisfactory economic growth had resumed during the fourth quarter. However, the Fed took little time to react to the latest news of slower economic growth, lowering the discount rate by 50 basis points in May. Unexpectedly, even long-term interest rates fell by at least as much; for example, mortgage interest rates declined by one-half to one percentage point within a week. This action by the Federal Reserve is likely to provide an immediate boost to the economy, both nationally and locally.

Despite slow growth and the Fed's reaction, no substantial change occurred during the last three months in the basic issues confronting the national economy: the trade and budget deficits and the strong dollar. Thus, continuing inconsistent, relatively slow growth remains the Bureau's national forecast for 1985. The timing of the ups and downs in the GNP is nearly impossible to predict. However, the Federal Reserve appears willing to take quick, decisive action to keep the economy

growing, but not too rapidly. Thus, while the roller coaster ride probably will continue, it is impossible to see around the next corner to know if a climb or a descent is in store.

THE 1985 ARIZONA FORECAST

Slow receipt of data is a common problem for forecasters, one that is more serious for those using and forecasting data on the local level. Halfway through the year, one might think that it would be relatively easy to provide a forecast for the entire year. However, at the time of this writing on June 4, limited data were available concerning the 1985 Arizona economy. At one extreme, an accurate population figure was not yet available for 1984, and preliminary personal income and Gross State Product (GSP) data just recently had become available for the fourth quarter, 1984. The situation was a little better for inflation and retail sales data, with first quarter, 1985, information available. Most up-to-date were the preliminary April statistics on employment and building permits. Thus, this forecast is based on incomplete data for even the first quarter of the year.

The personal income data for 1984 revealed that growth was even stronger than the Bureau's last estimate of 11.8 percent (see Table 1). Likewise, the expansion of the Arizona GSP exceeded Bureau expectations, with the 14.4 percent increase setting a new record by more than two percentage points.

So far in 1985, from the limited available information, some sectors of the Arizona economy have sustained near-boom growth, while others flirt with a recession. The budget and trade deficits and the strength of the dollar have created a situation nationally that is mirrored in Arizona: The production side of the economy—manufacturing, mining and agriculture—remains weak while other industries—services and construction in particular—continue to expand.

Base Forecast

Employment growth during the first four months of 1985 has been well behind the record 1984 pace, though in any year most of the gains occur later in the year due to seasonal factors in several industries. Most of the growth during 1985 has occurred in just two sectors: construction and services. The Bureau's employment forecast remains less optimistic, therefore, than those of other local forecasters. Because few new jobs are being created, the unemployment rate has continued to climb, though at a slower pace than during last winter.

Other than revisions made to be consistent with newly-received, actual 1984 data, the Bureau's 1985 base forecast remains identical to that of three months ago, except for the construction sector. With both solid gains in employment and continued near-record levels of building permits issued, the construction industry remains a bright spot in the Arizona economy. In particular, the office and apartment sectors have sustained more intense growth than expected.

Although the number of multifamily units permitted in Maricopa County has declined from 1984 record levels, the previous Bureau forecast for 1985—15,000 units permitted—was

TABLE 1
1985-86 ECONOMIC FORECAST

	Arizona			Maricopa County		
	1984[A]	*1985*[F]	*1986*[F]	*1984*[A]	*1985*[F]	*1986*[F]
Gross State Product						
Millions of 1972 Dollars	20,266	21,725	23,125	NA	NA	NA
Percent Change	14.6	7.2	6.4	NA	NA	NA
Personal Income						
Millions of Current Dollars	35,504	39,100	42,775	NA	NA	NA
Percent Change	12.5	10.1	9.4	NA	NA	NA
Retail Sales						
Millions of Current Dollars	19,399	21,350	23,275	12,434	13,725	15,025
Percent Change	11.6	10.0	9.0	12.6	10.4	9.5
Consumer Price Index						
Percent Change	NA	NA	NA	5.8	5.7	6.2
Unemployment (Percent)	5.0	5.7	6.5	3.8	4.5	5.3
Wage and Salary Employment						
Number in Thousands	1,181	1,250	1,310	770	820	865
Percent Change	9.6	5.8	4.8	11.1	6.5	5.5
Population						
Number in Thousands	3,095[E]	3,210	3,325	1,740[E]	1,810	1,880
Percent Change	4.5	3.7	3.6	4.9	4.0	3.9
New Single Family Housing Units Permitted						
Number	30,845	29,000	29,000	20,774	20,000	20,000
Percent Change	− 0.3	− 0.6	0.0	− 0.9	− 3.7	0.0
New Multifamily Housing Units Permitted*						
Number	47,539	30,000	15,000	36,817	20,000	10,000
Percent Change	43.0	−36.9	−50.0	53.8	−45.7	−50.0
Value of Building Permits						
Millions of Current Dollars	5,262	4,800	4,000	3,811	3,500	2,900
Percent Change	44.0	− 8.7	−16.7	54.3	− 8.2	−17.1

A = Actual; E = Estimated; F = Forecast; NA = Not Available

* Apartment complexes of three or more units.

Note: These forecasts correspond to the "status quo" scenario discussed in the text.

Source: Bureau of Business and Economic Research, College of Business, Arizona State University.

two-thirds attained during the first four months of the year. While the Bureau continues to expect the rate of construction to slow throughout 1985, it now seems more likely that 20,000 units will be permitted (see Figure I). The higher level of multifamily construction is primarily responsible for the increase in the forecasted value of building permits (see Figure II). As noted in the last forecast, current construction is not based on existing demand. The seasonally adjusted, multifamily vacancy rate is the highest in 10 years and is still climbing; it probably will exceed 12 percent this summer.

Other commercial construction also continues to boom, particularly that of office buildings. Typically in the vicinity of 15 percent, the vacancy rate in this sector already exceeds 20 percent in the Phoenix area; some analysts expect a vacancy rate of 40 percent by the end of 1986.

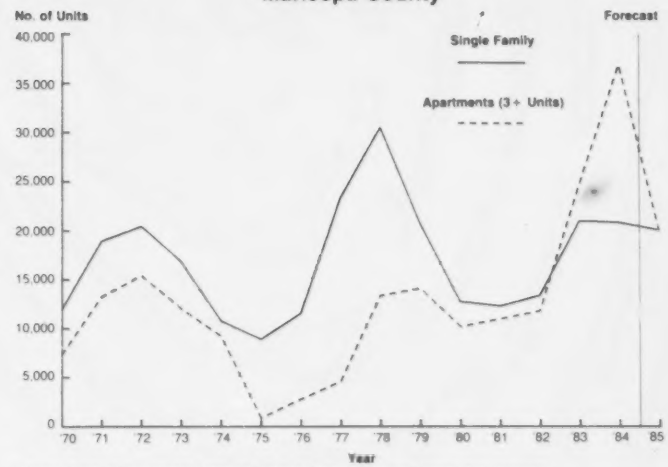
Alternative Forecasts

Rather than present just one forecast, as the Bureau has done in the past, alternative scenarios will also be discussed. Future forecasts, still to be presented quarterly, will offer specific predictions; in this article, however, only predictions for the base scenario are presented in Table 1.

Offering more than one forecast reflects recognition of the great uncertainties that exist within the nation's economy. Since the late 1960s, when high inflation and high unemployment first occurred at the same time (violating all existing economic theories), the U.S. economy has become increasingly complex, encountering new situations during each successive cycle. Neither historical precedent nor adequate economic theory has been available to explain these new situations. For example, the current conditions of large budget and trade deficits, high real interest rates, and a strong dollar have never before occurred. The result is that it is a real challenge to explain what is *currently* happening, much less make a forecast of *future* events. This lack of information and theory is responsible for the relatively poor track record of economic forecasters. (This topic will be explored in detail in upcoming issues of *Arizona Business*.)

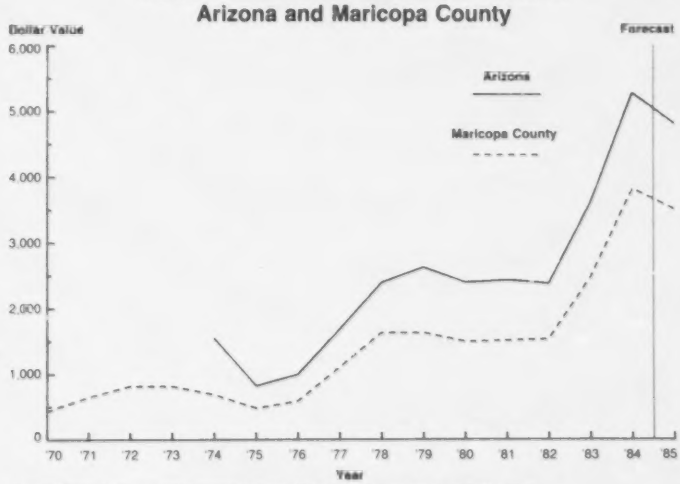
The inability to accurately forecast does not lead to the conclusion that forecasts should not be attempted.

FIGURE I
HOUSING UNITS AUTHORIZED
SINGLE FAMILY AND APARTMENTS (3+ Units)
Maricopa County



Source: Bureau of Business and Economic Research, College of Business, Arizona State University

FIGURE II
DOLLAR VALUE OF BUILDING PERMITS
Arizona and Maricopa County



Source: Bureau of Business and Economic Research, College of Business, Arizona State University

The highly cyclical nature of the economy necessitates forecasts that allow business, government, and the consumer to prepare for the consequences of the cycle's next stage. The presentation of alternative forecasts allows users to analyze the most complete information and choose the course of events they deem most likely.

Optimistic '85 Scenario. In addition to the base forecast, which assumes a continuation of erratic, relatively slow growth, two other scenarios seem possible during the remainder of 1985. The first, representing a more optimistic outlook, appears the more likely of the two. This optimistic alternative assumes that the recent Federal Reserve actions will have a strong and lasting effect. Coupled with decisive action by Congress this summer to reduce the deficit, interest rates decline and the dollar weakens in an orderly fashion. The domestic manufacturing and trade industries respond, with employment in Arizona growing by an additional 20,000 positions and personal income increasing by an extra $500 million over the base 1985 forecast.

Pessimistic '85 Scenario. A more pessimistic scenario assumes that the recent Federal Reserve actions have only a short-term effect, similar to that of last fall, and that Congress takes little or no action this summer on the deficit. After some improve-

ment during the second quarter, the economy declines into a growth recession during the remainder of 1985. The slowdown is uneven, with industries such as construction and services largely unaffected. Employment growth slows and the unemployment rate rises. This scenario seems unlikely given the expressed desires of the Federal Reserve and Administration to avoid such conditions. In Arizona, such a slump would likely lower employment, raise unemployment, and lower personal income and GSP from the levels predicted in Table 1.

OUTLOOK FOR 1986

The economy's performance in 1986 is heavily dependent on political actions that should take place during the summer and fall of 1985, particularly the deficit-cutting package. Thus, it seems premature at this time to present either much detail on the various scenarios or a quantitative assessment of their probabilities. The Bureau's forecasts for 1986 will become more specific in the coming months, including predictions, by scenario, for each item in Table 1.

Five scenarios for 1986 are discussed below.

Continuation of the Status Quo

This scenario presupposes that the conditions of the base forecast for 1985 persist through 1986: The economic expansion proceeds along the erratic path followed since summer 1984. Basic assumptions of this scenario include only modest action taken in Washington concerning the federal deficit and continued strength of the U.S. dollar.

Despite being three years old by the beginning of 1986, the expansion should be able to continue, for several reasons:

- Most sectors of the economy still have capacity to expand, with recessionary warning signals far from a concern.
- Because of the lengthy 1980-82 slumps, the economy is still far below its long-term-trend growth rate of 3 percent per year.
- The expansion of the late 1970s lasted nearly five years.

On the other hand, a continuation of such erratic and unbalanced conditions for 2½ years seems unlikely. Nevertheless, such conditions represent a "middle-of-the-road" or "control" scenario.

This scenario would translate to a continuation of current conditions in Arizona: some weak sectors and some strong sectors combining to produce above average growth. As indicated in Table 1, growth likely would be somewhat slower in 1986 than in 1985, due in large part to substantially lower levels of construction, particularly in the multifamily and office sectors.

A Mild, Short Recession

The key assumptions of this scenario include little progress on the nation's imbalances and moderate economic growth during the remainder of 1985, in response to Federal Reserve actions. However, these steps cause a surge in money supply that, in turn, brings on higher inflation and interest rates by the end of 1985. Coupled with continued weakness in manufacturing and trade, these conditions force a relatively mild and short recession during 1986. The recession is not more serious because of the reasons cited earlier for the economy's continuing ability to expand.

Such a recession was recently predicted by a majority of 400 economists surveyed by the National Association of Business Economists. It likely would result in slower-than-average growth in Arizona, but not in a contraction in economic activity. The migration of people and creation of jobs should not be reduced to a level that would induce more serious effects in Arizona, though most economic sectors should be impacted by the slowdown.

Solid Growth

This alternative represents a continuation of the optimistic scenario presented for 1985. It basically assumes that considerable progress on the deficit, plus action by the Federal Reserve, lowers real interest rates. The dollar weakens and the trade deficit shrinks. Thus, the two key imbalances gradually fade away. The result is not record growth, but rather the 4 percent GNP growth that the Administration has predicted. For the reasons noted earlier, the expansion could continue through at least 1986 without precipitating a recession.

Such a scenario paints a bright picture for the Arizona economy. Following a brief slowdown during 1985, when the expansion still exceeds its average pace, the economy would again boom in 1986, though the record levels of 1983-84 likely would not be reached.

Recovery

This scenario corresponds to the growth recession alternative presented for 1985. The slower economy in 1985, accompanied by a later reduction in the deficit, allows interest rates to fall and inflationary pressures to decline. However, while the magnitude of the imbalances becomes smaller, the underlying problems do remain. Thus, growth in 1986 is not as consistent or rapid as in the "solid growth" scenario but is stronger and less erratic than in the "status quo" alternative. Conditions in Arizona, therefore, also would lie between these two scenarios.

More Severe Recession

The occurrence of a deeper, more prolonged slump in 1986 is highly unlikely. For a severe recession to occur, current conditions would have to worsen, with no responsive action taken by policy-makers. Virtually all sectors of the economy would suffer, both nationally and in Arizona. The slump in Arizona would likely be as long, but not as deep, as the national decline.

SUMMARY

Developments during this summer should go far toward determining the economy's course for the remainder of 1985 and 1986. The economy's response to recent Federal Reserve actions, as well as to any additional moves by the Fed, represent one important arena to watch. Congressional action, particularly legislation concerning the budget, also will be an important determinant of the economy's performance. However, other Congressional measures, such as new protectionist laws, would also have a direct impact on the economy.

As the economic cycle nears a potential turning point, considerable diversity of opinion arises among analysts and forecasters. The various scenarios discussed in this article represent just some of the possibilities forwarded by various economists.

— **Luke Koons**
Research Analyst

— **Tom R. Rex**
Research Manager

Council of 100 Economic Outlook

The second half of 1985 will show stronger economic growth than did the first half of the year, according to a survey of the College of Business Dean's Council of 100. Council members are executives at the senior level, primarily from firms in the metropolitan Phoenix area. They are polled at the beginning of the year and at mid-year by the Bureau of Business and Economic Research.

Council members were asked to compare expected real economic growth nationally in 1985 with 1984, growth in 1986 with 1985, and during the next six months with the previous six months (Table 1). Responses were averaged, then weighted, so that calculated scores of 50 for any entry indicate no change is anticipated, scores of more than 50 reflect expectations for improvement, and scores of less than 50 indicate that worsening business conditions are expected.

Scores for the most recent survey show that the executives expect 1985 to be slightly weaker than 1984 (score of 48); 1986 to be weaker economically than 1985 (score of 47); but the next six months to bring some improvement in economic growth (score of 53). First quarter annualized growth in real GNP was 0.3 percent, a fraction of the 5.9 percent quarterly average for 1984.

Council members widely expected the sales and revenues of their firms to increase during 1986, compared to 1985 (score of 95). However, their outlook for all of 1985, compared to 1984, deteriorated somewhat between the survey of December 1984 (score of 86) and the most recent survey (score of 76).

In the December 1984 survey, 49 percent of the respondents believed interest rates would fall in 1985. Indeed, the prime rate has declined steadily from 11.5 percent in mid-December. Rates will continue to fall, according to 59 percent of respondents to the current survey. However, 41 percent believe the prime rate will be higher again within 12 months. A slim majority (51 percent) believes that both unemployment and inflation will be higher within 12 months. Few Council members believe these indicators will be lower in the near future. Survey respondents (57 percent) also think the stock market will continue its recent upward trend for at least the next six months.

Asked to project the year in which the national economy will go into recession, 51 percent of respondents expressed the view that 1987 will see the next major economic downturn in the business cycle. Thirty-five percent of respondents expect a recession in 1986, while only 5 percent project a recession in 1985.

— Lee R. McPheters

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TABLE 1
ASU COUNCIL OF 100
ECONOMIC OUTLOOK SCORES*

	National Outlook		My Organization	
Outlook Period	*(6/85)*	*(12/84)*	*(6/85)*	*(12/84)*
1985 Compared to 1984	48	30	76	86
1986 Compared to 1985	47	NA	95	NA
Next Six Months	53	NA	76	NA

*Council members had three reply options to each question: Higher, Same, or Lower. The score for each question was calculated by averaging the weighted replies. The weights: Higher - 100; Same - 50; Lower - 0. Scores may range from 0 to 100, with higher scores reflecting a greater degree of optimism. Scores near 50 indicate no change, scores above 50 indicate expected improvement, and scores below 50 indicate expected worsening of business conditions.

Source: Bureau of Business and Economic Research, College of Business, Arizona State University.

TABLE 2
ASU COUNCIL OF 100
PROJECTIONS FOR ECONOMIC VARIABLES

	Percent of Council Members Indicating Each Response					
	In Six Months			In Twelve Months		
Variable	*Higher*	*Same*	*Lower*	*Higher*	*Same*	*Lower*
Prime Rate	19	22	59	41	24	35
Unemployment	41	51	8	51	27	22
Inflation Rate	38	57	5	51	35	14
Dow Jones IA	57	30	13	49	30	21

Source: Bureau of Business and Economic Research, College of Business, Arizona State University.

Lodging Places Make $538 Million, Employ 22,000 in '82

Arizona lodging places that have a payroll numbered 704 in 1982, according to the Census of Service Industries conducted by the U.S. Bureau of the Census. These establishments generated total receipts of $538 million and paid $150 million to 21,973 employees.

The lodging industry consists primarily of motels (59 percent of all establishments), hotels (27 percent), and trailer parks (14 percent). Many small lodging places, especially trailer parks, have no employees and, therefore, were not included in this census.

Receipts per establishment within the entire lodging industry averaged $764,000 in 1982, and employment per establishment averaged 31 workers. These figures were much larger for hotels ($1.8 million and 80 employees) and much smaller for other lodging places. Employee pay averaged just $6,800, reflecting the industry's need for part-time and seasonal workers as well as for a large number of unskilled workers.

One-half of the lodging establish-

See "Lodging," page 15

Arizona Construction Steams Ahead in First Quarter

The Arizona construction industry continued its strong level of performance during the first quarter of 1985. As shown in the tables, nearly $1.4 billion (27,165 permits) worth of new construction activity was authorized, an 8 percent decrease from the 29,539 permits issued during first quarter, 1984, but a 4 percent increase in dollar value (from $1.3 billion). First quarter activity was a significant improvement over the last quarter of 1984, with a 19 percent jump in recorded permits, from 22,638, and a 13 percent gain in dollar value, from $1.2 billion.

Driving the expansion has been Maricopa County's strong economic growth. Compared to fourth quarter, 1984, county totals, the number of permits grew 24 percent (13,702 to 17,039), while dollar value rose 23 percent ($836 million to $1 billion). The first quarter level of activity in Maricopa County represented 63 percent of permits issued statewide and 71 percent of Arizona's recorded dollar value.

Pima County reported a 13 percent increase in building permits over the preceding quarter (3,716 to 4,212) and a 5 percent improvement in dollar value ($191 million to $202 million). Relative to the rest of the state, Pima County had 16 percent of the recorded permits and 14 percent of the reported dollar value. Table 1 shows the key sectors of construction activity.

SECTORAL ACTIVITY

Residential

Maricopa County. The single family sector has not fully participated in the current construction boom, due primarily to relatively high interest rates. Those rates remained fairly stable during the first quarter, however, even showing signs of decline. Hence, the number of single family home permits rose to 6,277, the second highest quarterly total of the 1980s; this number was surpassed only by the 6,670 permits issued during second quarter, 1983.

Cities showing definite improvement since fourth quarter, 1984, included Phoenix (1,231 permits to 2,172 permits), Chandler (573 permits to 773 permits), Mesa (538 permits to 754 permits), and Peoria (367 permits to 477 permits).

The remodeling sector turned in another strong performance. In the first quarter, 1,599 permits, worth $13 million, were issued, in contrast to 1,646 permits, valued at $11 million, for the previous quarter. Growth in this sector is in response to the inability of many homeowners to significantly improve their housing through the purchase of a new home.

Rest of Arizona. Single family activity in Pima County improved from the 967 permits of fourth quarter, 1984, to 1,019 permits, but that number was still below the 1,224 permits issued during the first quarter of 1984. Activity occurred predominantly in the unincorporated area of Pima County, with 717 permits issued, in contrast to 265 permits for Tucson.

The rest of Arizona reported a very similar pattern. In the first quarter, 1,257 permits were issued, compared to 1,084 permits in the fourth quarter and 1,867 permits for the first quarter, 1984. Leading areas of activity included unincorporated Yavapai County (256 permits), Flagstaff (69 permits), Lake Havasu City (107 permits), Kingman (67 permits), Prescott (72 permits), Prescott Valley (52 permits), and Yuma (53 permits).

Activity in the mobile home sector continued to improve, with 2,600 first quarter permits issued, an increase from the 2,116 permits of fourth quarter, 1984. Maricopa County accounted for 502 permits, while Pima County recorded 492 permits. Much

TABLE 1
KEY SECTOR CONSTRUCTION ACTIVITY
(First Quarter 1985, Fourth Quarter 1984, and First Quarter 1984)

	SINGLE FAMILY		COMMERCIAL							
			APARTMENTS[a]		OFFICE BUILDINGS[b]		RETAIL STORES[c]		INDUSTRIAL	
Maricopa County	Number of Permits	Dollar Value	Number of Permits	Dollar Value	Number of Permits	Dollar Value	Number of Permits	Dollar Value	Number of Permits	Dollar Value
First Quarter, 1985	6,277	408,567,268	438	215,821,238	94	76,507,122	227	62,974,489	151	90,747,607
Fourth Quarter, 1984	4,428	302,155,023	361	159,124,384	104	81,212,957	146	45,611,111	177	57,258,720
First Quarter, 1984	5,937	376,639,687	613	254,155,458	70	72,215,918	222	38,009,677	167	35,259,999
Pima County										
First Quarter, 1985	1,019	57,912,007	87	50,689,954	26	26,796,312	25	10,785,360	27	8,599,202
Fourth Quarter, 1984	867	52,218,933	76	36,383,335	50	37,079,404	30	4,753,969	15	7,656,700
First Quarter, 1984	1,224	67,436,367	59	54,556,789	22	16,315,800	14	2,091,068	10	2,439,100
Rest of Arizona										
First Quarter, 1985	1,257	59,182,724	34	13,449,337	34	1,918,514	69	9,331,777	35	2,381,128
Fourth Quarter, 1984	1,084	51,377,969	16	49,971,641	40	3,404,315	66	14,938,835	34	2,593,428
First Quarter, 1984	1,867	74,896,281	24	6,455,683	19	1,864,169	132	22,138,494	24	1,946,662
Arizona Total										
First Quarter, 1985	8,553	525,661,999	559	279,960,529	154	105,223,948	321	83,091,626	213	101,727,937
Fourth Quarter, 1984	6,379	405,751,925	453	245,479,360	194	121,696,676	242	65,303,915	226	67,508,848
First Quarter, 1984	9,028	518,972,535	696	315,167,930	111	90,395,887	368	62,239,239	201	39,645,761

[a] Five or more housing units.
[b] Office, bank, medical and professional buildings.
[c] Shopping centers and other mercantile buildings.

Source: Bureau of Business and Economic Research, College of Business, Arizona State University.

of the mobile home activity occurred in the unincorporated areas of Yavapai County (191 permits), Yuma County (214 permits), Pinal County (102 permits), Mohave General (242 permits), and Mohave Valley North (109 permits).

Commercial

Maricopa County. Commercial building, led by the multifamily (five or more housing units) and office building sectors, was the major force behind booming first quarter construction activity in Maricopa County. Depending on the jurisdiction, the multifamily sector includes permits for apartment and condominium projects. Most completed units tend to be in the rental market, not owner-occupied. Contrary to many expectations, the multifamily sector continued to be very active, with 438 permits issued for 8,410 authorized housing units. The level of activity was down 10 percent from the 9,344 housing units permitted one year earlier, but was up 46 percent over the 7,658 units authorized during the final quarter of 1984. Primary areas of activity included Chandler (480 units), Gilbert (458 units), Glendale (424 units), Mesa (1,653 units), Phoenix (4,229 units) and Tempe (405 units). Even with the record activity of the last two years, the metropolitan vacancy rate — 7 percent during the first quarter — has remained fairly close to historical norms.

Despite increasing discussion concerning the future strength of the office building sector, permit activity remained strong (94 permits, valued at $77 million). As shown in Table 1, the reported level of activity was consistent with previous quarters. Phoenix led the sector, with 46 permits, worth $54 million. Most of the permitted projects were structures with 25,000 to 50,000 square feet; only three projects exceeded 200,000 square feet. Office building activity also occurred in Scottsdale (17 permits at $7.8 million), Tempe (5 permits at $5.7 million), Mesa (12 permits at $4.5 million), and Chandler (7 permits at $3.1 million).

The retail sector regained development momentum, with 227 permits ($63 million) issued. This level of activity was well above that reported one year earlier (222 permits at $38 million) and that recorded last quarter (146 permits at $46 million). The increase in dollar value, while permit activity remained fairly constant, indicates that much of the current construction is related to new retail projects, rather than to the expansion of existing centers. Retail development was reported as follows: Tempe (55 permits at $12 million), Scottsdale (6 permits at $8 million), Phoenix (60 permits at $19 million), Mesa (20 permits at $10 million), and Glendale (8 permits at $11 million). Permit activity in Tempe included a $1.1 million restaurant, a $2.2 million specialty center, and a $1.3 million retail building.

Rest of Arizona. Multifamily activity in Pima County increased from 1,503 authorized units ($36 million) in the fourth quarter, 1984, to 2,087 authorized units ($51 million) during first quarter, 1985. Most of the activity occurred in Tucson (1,397 authorized units), compared to 690 units in the unincorporated area of Pima County.

Continued economic growth in Pima County is evidenced by improved activity in the office building sector, in which 26 permits, valued at $27 million, were issued. This level of activity is below the 50 permits ($37 million) issued in the fourth quarter but well above the 22 permits ($16 million) recorded one year earlier. Practically all of the office building permits were issued for Tucson (22 permits at $26 million), including structures valued at $8 million, $3.2 million, $2 million, and $1.7 million. The retail sector expanded from 30 permits ($5 million) at the end of 1984 to 25 permits ($11 million) for the first quarter, 1985.

The economic imbalance between the two metropolitan counties and the remaining counties is evident from analyzing commercial activity. In the multifamily sector, only 773 units ($13.5 million) were authorized. Relative to this level of activity, 454 units ($6.5 million) were approved in Sierra Vista. The office sector continued at a low level of development, with 34 permits ($2 million) issued. Historically, the retail sector has been fairly strong in the non-metropolitan counties. It has been on a downward trend, however, with 69 permits ($9 million) issued during the first quarter, in contrast to 66 permits ($15 million) for the fourth quarter and 132 permits ($22 million) for the first quarter, 1984.

Industrial

Maricopa County. The county's industrial sector recorded a dramatic jump in construction activity, with the issuance of 151 permits, worth $91 million. First quarter activity reached its single greatest quarterly level ever, exceeding the $89 million of industrial activity reported for all of 1983. Contrary to previous years, the leading area was Chandler (9 permits at $33 million). Other active areas included Phoenix (42 permits at $16 million), Tempe (67 permits at $23 million), and Glendale (19 permits at $10 million). The basic strength of this sector was further shown during the first quarter via a record absorption of 2.6 million square feet.

Rest of Arizona. Industrial activity in Pima County continued to improve, with 27 permits ($8.6 million) issued. This level of development was more than the 15 permits ($7.7 million) reported in the fourth quarter and was a definite improvement over first quarter, 1984 (10 permits at $2.4 million). Industrial activity was fairly evenly divided between Tucson (10 permits at $4.4 million) and unincorporated Pima County (15 permits at $4.1 million).

Unlike the metropolitan counties, the rest of Arizona recorded fairly stable industrial activity, issuing 35 permits ($2.4 million), compared to 34 permits ($2.6 million) for fourth quarter, 1984, and 24 permits ($1.9 million) for first quarter, 1984. Most of the permitted projects were small, with no single project exceeding $500,000. Areas of activity included Cottonwood (3 permits at $402,000), Yuma (5 permits at $434,000), and unincorporated Yuma (7 permits at $474,000).

Other Sectors

This category is an amalgamation of permitted activity. The state totals include permits for churches (33 at $12 million), medical facilities (13 at $12 million), and educational facilities (25 at $20 million). This sector also includes remodeling activity, public buildings, and swimming pools.

As expected, most of the activity occurred in Maricopa County, with 22 permits issued for churches ($10.5 million), 7 permits for medical facilities ($7.7 million), and 20 permits for educational facilities ($18 million). Other areas of activity included a $1

million medical facility in Douglas, a $1.2 million educational facility in Flagstaff, a $3 million religious structure in unincorporated Navajo County, $1.8 million (3 permits) for medical facilities in Prescott, and $1.7 million (2 permits) for medical facilities in Cottonwood.

LOOKING AHEAD

As previously noted, most of the first quarter, 1985, construction activity occurred in the metropolitan counties, in response to strong economic development. Basically, this means that the state is still very dependent on the growth of the economic bases within Maricopa and Pima counties. Until the remaining counties develop more vigorous economic bases, construction activity will continue to be primarily in the two metropolitan counties.

It is apparent from the level of construction activity that capital, even at a fairly high cost, has been available, especially for commercial and industrial projects. The recent decline in interest rates such as those for conventional, 30-year mortgages (from 13.50 percent to 12.50 percent) should provide additional impetus for the single family sector. However, because lenders are tightening qualification standards for mortgage lending, the actual increase in single

Arizona Building Permits: Quarterly Report

	Residential*		Commercial		Industrial		Other		Total	
First Quarter, 1985	*Number of Permits*	*Dollar Value*	*Number of Permits*	*Dollar Value*	*Number of Permits*	*Dollar Value*	*Number of Permits*	*Dollar Value*	*Number of Permits*	*Dollar Value*
APACHE COUNTY	40	1,357,285	4	51,000	0	0	6	6,271	50	1,414,556
Percent Change, Previous Year	25	72	100	−82	0	0	50	−73	31	27
Percent Change, Previous Qtr.	−25	86	100	−3	0	0	50	−91	−16	79
COCHISE COUNTY	249	4,727,871	16	11,387,356	2	278,400	274	2,550,061	541	18,943,688
Percent Change, Previous Year	−34	−45	−48	20	0	16	−12	23	−25	−7
Percent Change, Previous Qtr.	12	−5	6	20	−50	−23	−5	−55	1	−7
COCONINO COUNTY	219	7,360,133	28	6,006,894	2	333,645	78	2,653,611	327	16,354,283
Percent Change, Previous Year	−36	−42	64	307	9,999	9,999	−40	222	−33	8
Percent Change, Previous Qtr.	−30	−26	47	−88	−50	111	−17	211	−24	−74
GILA COUNTY	165	2,986,960	2	212,393	4	124,197	24	152,245	195	3,475,795
Percent Change, Previous Year	−19	8	−50	−64	−50	−67	−45	−93	−25	−42
Percent Change, Previous Qtr.	−5	−11	−71	13	0	51	−22	−93	−10	−42
GRAHAM COUNTY	100	1,204,868	5	69,700	3	47,700	25	20,625	133	1,342,893
Percent Change, Previous Year	−9	−11	−44	130	50	−82	66	−37	−2	−20
Percent Change, Previous Qtr.	−3	−20	−28	−52	9,999	9,999	66	−92	5	−30
GREENLEE COUNTY	5	45,900	0	0	0	0	0	0	5	45,900
Percent Change, Previous Year	9,999	9,999	0	0	0	0	−100	−100	400	1,211
Percent Change, Previous Qtr.	400	3,430	0	0	0	0	−100	−100	25	380
LA PAZ COUNTY	64	1,156,476	7	625,237	1	32,320	67	366,328	139	2,180,361
Percent Change, Previous Year	−20	−1	133	81	9,999	9,999	116	−1	20	15
Percent Change, Previous Qtr.	−39	1	39	112	9,999	9,999	39	17	−12	24
MARICOPA COUNTY	8,745	431,045,798	968	392,114,424	151	90,747,607	7,175	120,458,503	17,039	1,034,366,332
Percent Change, Previous Year	−3	6	−19	−3	−9	157	0	8	−3	8
Percent Change, Previous Qtr.	26	34	3	16	−14	58	24	0	24	23
MOHAVE COUNTY	1,140	16,992,321	68	8,139,697	2	96,000	579	2,574,354	1,789	27,804,372
Percent Change, Previous Year	−24	−39	−59	−56	100	−2	3	−44	−20	45
Percent Change, Previous Qtr.	61	16	19	−10	−50	−86	11	−45	39	6
NAVAJO COUNTY	174	2,550,334	8	2,204,032	0	0	27	522,085	209	5,276,451
Percent Change, Previous Year	3	−29	700	1,299	0	0	3	967	7	38
Percent Change, Previous Qtr.	5	−31	14	170	−100	−100	−9	64	2	7
PIMA COUNTY	2,309	65,055,100	156	103,180,759	27	8,599,202	1,720	25,588,849	4,212	202,423,910
Percent Change, Previous Year	−28	−13	−1	5	169	252	2	6	−15	1
Percent Change, Previous Qtr.	10	6	−7	9	79	12	19	−9	13	5
PINAL COUNTY	486	8,022,594	24	1,649,849	4	121,000	232	1,459,069	726	11,252,512
Percent Change, Previous Year	2	23	−17	−49	100	−83	−22	−1	−7	−6
Percent Change, Previous Qtr.	12	39	−7	−24	9,999	9,999	4	−43	9	7
SANTA CRUZ COUNTY	69	903,290	2	150,000	0	0	15	309,288	86	1,362,578
Percent Change, Previous Year	137	−15	9,999	9,999	0	0	36	108	114	12
Percent Change, Previous Qtr.	175	−10	9,999	9,999	0	0	114	−36	168	−8
YAVAPAI COUNTY	798	24,034,573	46	3,808,664	5	437,702	230	6,221,774	1,079	34,502,713
Percent Change, Previous Year	0	−2	−2	−25	−28	162	−37	59	−11	1
Percent Change, Previous Qtr.	45	35	−4	−44	−28	31	−5	267	27	29
YUMA COUNTY	440	10,666,523	28	3,944,551	12	908,164	155	1,325,964	635	17,047,202
Percent Change, Previous Year	0	9	250	113	500	1,152	11	−83	7	−13
Percent Change, Previous Qtr.	−9	−5	7	43	19	2	17	−85	−3	−30
TOTAL, ARIZONA	14,983	578,312,026	1,326	533,544,556	213	101,727,937	10,607	164,209,027	27,185	1,377,793,546
Percent Change, Previous Year	−11	0	−19	−1	5	156	−1	3	−8	4
Percent Change, Previous Qtr.	22	26	3	3	−5	50	19	−6	19	13

*Includes mobile homes.
N/R: No Report.
NC: Some communities do not collect dollar valuations.
9,999: The prior period had no activity, or the percent change is greater than 9,999.
−100: The current period had no activity, but the prior period did have activity.

Source: Bureau of Business and Economic Research, College of Business, Arizona State University.

family activity may not be as strong as its potential.

The tightening of qualification standards will especially affect the entry-level homebuyer. The housing market has shifted, however, to the move-up segment. During the first quarter of 1985, 50 percent of all new homes in Maricopa County were sold for more than $80,000, in contrast to 38 percent one year earlier.

Homebuyers have become increasingly interested in high-quality amenity features such as vaulted ceilings, larger master bathrooms and kitchens, and more innovative floor plans. Further, homebuilders are again developing master planned communities, to provide a controlled environment and recreational amenities such as golf and tennis.

Given the high level of construction activity, concern is increasing that the multifamily and office building sectors are being overbuilt. It is believed that many current projects are being developed more for their long-term potential than on the basis of current demand. Since metropolitan Phoenix is expected to be one of the fastest growing areas in the United States, the long-term outlook is very promising, even if the current potential is somewhat questionable.

Most people foresee retail development having a very good year. Retail activity has been good, and several new residential areas need shopping centers. Although it is unlikely that industrial development will maintain the pace of the first quarter, record absorption and low vacancy rates should provide stimulation for continued development in Maricopa County. Other areas where industrial activity is expected to continue are Pima County and Casa Grande, the latter having a superior transportation network for distribution.

The strong infusion of capital and the entry of national developers into the Phoenix metropolitan real estate market provide additional recognition of the area's dynamic future potential. The main drawback of the current construction boom is that it is taking place primarily in the two metropolitan counties, while the other counties continue efforts to attract the growth industries that will expand their economic base.

— **Jay Q. Butler**

Arizona New Housing Starts: Quarterly Report

	Housing Units Authorized*					
First Quarter, 1985	*One Family*	*Mobile Homes*	*Duplex*	*3-4 Family*	*5 or More*	*Total*
APACHE COUNTY	29	2	0	0	20	51
Percent Change, Previous Year	31	−66	0	9,999	9,999	82
Percent Change, Previous Quarter	−3	−76	0	−100	0	−19
COCHISE COUNTY	76	72	0	4	454	606
Percent Change, Previous Year	−50	−31	9,999	33	6,385	124
Percent Change, Previous Quarter	−9	16	−100	9,999	185	96
COCONINO COUNTY	118	54	2	0	120	294
Percent Change, Previous Year	−37	−44	−75	−100	66	−20
Percent Change, Previous Quarter	−2	−39	−89	−100	25	−13
GILA COUNTY	42	39	0	4	0	85
Percent Change, Previous Year	−37	−37	−100	−59	−100	−42
Percent Change, Previous Quarter	−39	−7	0	0	0	−25
GRAHAM COUNTY	14	43	0	0	0	57
Percent Change, Previous Year	7	−4	0	0	0	−1
Percent Change, Previous Quarter	−29	−6	0	−100	0	−18
GREENLEE COUNTY	0	1	0	0	0	1
Percent Change, Previous Year	9,999	9,999	0	0	0	9,999
Percent Change, Previous Quarter	9,999	9,999	0	0	0	9,999
LA PAZ COUNTY	7	32	0	0	0	39
Percent Change, Previous Year	39	−21	9,999	9,999	9,999	−15
Percent Change, Previous Quarter	600	−46	9,999	9,999	9,999	−36
MARICOPA COUNTY	6,277	502	176	411	8,410	15,776
Percent Change, Previous Year	5	−2	−8	−44	−10	−5
Percent Change, Previous Quarter	41	10	33	−40	46	37
MOHAVE COUNTY	276	549	0	24	90	939
Percent Change, Previous Year	−62	71	0	−3	−33	−23
Percent Change, Previous Quarter	98	107	−100	100	21	67
NAVAJO COUNTY	52	64	0	0	0	116
Percent Change, Previous Year	−42	481	9,999	9,999	9,999	14
Percent Change, Previous Quarter	−36	300	−100	9,999	9,999	15
PIMA COUNTY	1,019	492	70	20	2,087	3,688
Percent Change, Previous Year	−16	−21	34	−79	−23	−21
Percent Change, Previous Quarter	17	−3	66	−29	36	24
PINAL COUNTY	121	230	42	4	57	454
Percent Change, Previous Year	14	−9	425	−85	184	9
Percent Change, Previous Quarter	57	−3	600	−87	9,999	28
SANTA CRUZ COUNTY	14	47	0	6	0	67
Percent Change, Previous Year	−26	2,250	9,999	9,999	9,999	219
Percent Change, Previous Quarter	−36	4,600	9,999	9,999	9,999	191
YAVAPAI COUNTY	410	238	20	46	20	734
Percent Change, Previous Year	7	26	150	187	−51	15
Percent Change, Previous Quarter	37	226	25	−13	−75	40
YUMA COUNTY	98	235	0	11	12	356
Percent Change, Previous Year	20	−12	9,999	266	19	−2
Percent Change, Previous Quarter	−16	−4	−100	−15	9,999	−7
TOTAL ARIZONA	8,553	2,600	310	530	11,270	23,263
Percent Change, Previous Year	−5	2	13	−42	−9	−7
Percent Change, Previous Quarter	34	22	12	−38	47	34

*Note: All columns in this table report Housing Units Authorized. In the past, all but the last column reported building permits issued.
N/R: No Report.
9,999: The prior period had no activity, or the percent change is greater than 9,999.
−100: The current period had no activity, but the prior period did have activity.

Source: Bureau of Business and Economic Research, College of Business, Arizona State University.

Dr. Butler is Associate Professor of Real Estate in the College of Business, Arizona State University. He also serves as Director of the Arizona Real Estate Institute.

Purchasing Indicators Waver in May

The Arizona economy continued to follow a subdued growth curve in May, wavering between a resumption of the robust growth of 1983 and 1984 and the beginning of an economic downturn. The good news is that prices are stable — inflation is stopped dead in its tracks, at least temporarily. It need not be a concern to federal economic policy-makers in their efforts to stimulate a resumption of growth. The bad news is that an inventory liquidation is underway, which will curtail future economic growth. This occurrence has serious implications for Arizona's economic health.

The economy could turn down fairly quickly if the new order growth rate continues to moderate and if the tempo of inventory reductions increases. However, government policy-makers are aware of the precariousness of the current situation. Congressional and White House efforts to get serious about cutting the Federal budget deficit, as well as moves by the Federal Reserve to reduce interest rates, will have a positive effect. They are likely to extend the current, measured expansion well into the second half of the year and, hopefully, into 1986.

Table 1 presents the results of the May survey of Arizona purchasing managers.

TABLE 1
MAY PURCHASING SURVEY

Key Indicators	Percent of Purchasing Managers Indicating Each Response (May compared to April) Higher	Same	Lower
Prices paid for major commodities	19	63	18
Delivery time from vendors	21	61	18
Purchased materials inventory level	21	49	30
New orders received	44	28	28
Production	42	35	23
Employment	31	49	20
Purchases	42	27	31

Source: Purchasing Management Association of Arizona and the Purchasing Management Association of Southern Arizona.

PRICES

Prices paid for major purchased items remained unchanged in May, the price indicator registering its smallest increase in more than two years (since February 1983). The underlying inflationary trend appears to have been neutralized, which will be a strong positive factor in extending the current, moderate expansion over the balance of 1985.

DELIVERY TIME

Delivery time on shipments from vendors stretched only slightly in May, marking the fifth consecutive month of small gains. The very moderate increases in delivery times over the past five months show that the rate of economic expansion so far this year is well under the very strong performance of the previous two years.

INVENTORIES

Inventory levels of purchased materials dropped in May, for the first time since last November. Inventory levels have been essentially stable each month this year and have not stimulated economic growth. If inventory reductions gain momentum over the summer months, economic growth will be further curtailed and could turn negative.

NEW ORDERS

New orders received by Arizona firms rose in May at the same rate as in April. The new order increase rate began slowing during fourth quarter, 1984, and has continued to drop off, with the exception of a slight flurry of activity in February and March.

PRODUCTION

Production went up again, but at a slower rate than in April. The May net increase was the smallest so far this year. Sluggish performance in new orders received, coupled with attempts to reduce inventory levels, can be expected to further adversely affect production rates over the summer months.

EMPLOYMENT

Employment advanced moderately in May, continuing the trend that began in January. The employment gains during each of the five months of 1985 have been smaller than almost any monthly increase of the previous two years, showing the extent to which the growth rate has slowed.

PURCHASES

Purchases of materials and supplies by Arizona firms increased at a rate half as great as that for April and the lowest since last November. This was the second smallest net gain recorded for this indicator since its inception more than two years ago (March 1983); it is indicative of slowing in the economic growth rate.

— Harold Fearon

Dr. Fearon is chairman of the Department of Purchasing, Transportation, Operations in the ASU College of Business and is the National Association of Purchasing Management Professor.

Arizona Purchasing Survey

Now in its 23rd year of monthly reporting, Dr. Harold Fearon's survey of Arizona business conditions utilizes data from a questionnaire sent to members of the purchasing management associations of Arizona and southern Arizona. It asks them to indicate the direction of activity—higher, unchanged, or lower—of seven key measures of economic activity in the month just ended. These purchasing managers deal daily with supply, demand, and price factors in the marketplace; their aggregate readings have accurately charted the state's economic course for two decades, providing timely data on turning points.

Arizona Leading Index Flat in April

The Arizona Index of Leading Economic Indicators rose only 0.1 percent in April, following three successive larger gains (see Figure I). The index reached 123.2, up from a revised 123.1 in March (1977 = 100).

While increases during the first three months of 1985 totalled 1.7 percent, the March gain was misleading because it was due to improvement in just three of the ten index components (see Table 1). Thus, April's slight advance represented the second weak month in a row, marking a return to the erratic performance that occurred throughout 1984 (the index rose just 0.6 percent between December 1983 and December 1984). The stronger gains posted in January and February apparently signaled only a brief upsurge in economic activity during the second quarter.

Nine of the ten index components changed only minimally in April; the diffusion index of 50 also measured the stagnation. April's only improvement came in average weekly hours worked in the manufacturing industry, which increased moderately for the third consecutive month.

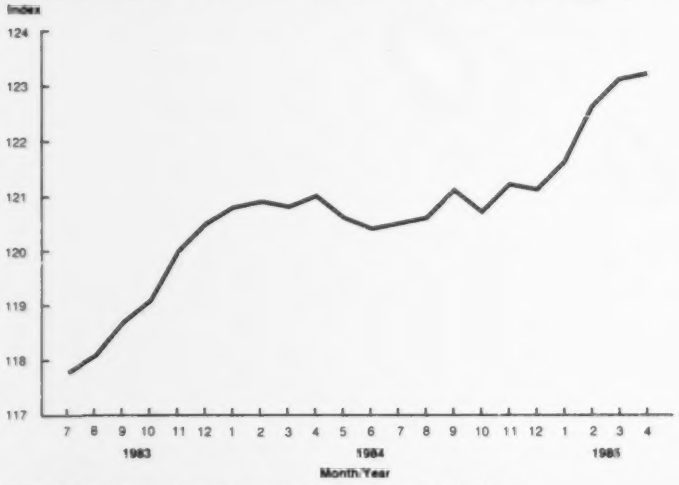
OUTLOOK

The national Index of Leading Economic Indicators fell slightly in April, following a scant 0.1 percent revised gain in March. This index, too, had posted larger increases in January and February. The national and Arizona indexes continue to report similar indications except that the national index has fallen slightly since the beginning of 1984, while the Arizona index has risen slightly. The continuation of this pattern suggests that inconsistent, relatively slow economic growth is likely to persist at least into the summer. Any impact from the moves made by the Federal Reserve on May 17 will not be measured in the index until June at the earliest.

— **Luke Koons**
Research Analyst

— **Tom Rex**
Research Manager

FIGURE I
ARIZONA INDEX OF LEADING ECONOMIC INDICATORS



Source: Bureau of Business and Economic Research, College of Business, Arizona State University.

TABLE 1
NET CONTRIBUTION OF INDIVIDUAL COMPONENTS TO THE ARIZONA INDEX OF LEADING ECONOMIC INDICATORS

	Net Contribution+			
	Jan.	*Feb.*	*March*	*April*
Delivery Time*	−.02	.00	−.05	−.01
Inventory Levels*	−.03	−.03	−.01	.03
New Orders*	−.02	.01	−.02	.01
Production*	.02	.00	−.05	−.02
Employment*	−.01	.00	−.01	.01
Residential Building Permits	.08	.12	.08r	−.03
Unemployment Insurance Claims	−.19	−.10	−.02	.01
Average Workweek, Manufacturing	−.16	.12	.27	.15
Money Supply	.78r	.99r	.40r	−.01
Change in Sensitive Materials Prices	.04	−.08	−.13	−.02
OVERALL INDEX	.49r	1.03r	.46r	.12

rRevised

+The net contribution of each component is calculated by multiplying the monthly change in its index by its relative importance.

*Based on indicators from the purchasing management associations of Arizona and southern Arizona.

Source: Bureau of Business and Economic Research, College of Business, Arizona State University.

"Lodging," from page 9

ments were located outside the metropolitan areas of Arizona, a proportion more than double the rural areas' share of population. These rural establishments were relatively small; their share of the industry's employment and receipts was approximately 25 percent.

Lodging establishments located in Maricopa County numbered only slightly more than one-third of the state total, but they generated 60 percent of total receipts. Large hotels are more common in the Phoenix area than elsewhere in Arizona. This is particularly true in Scottsdale, where the 28 lodging places generated nearly 20 percent of the state's lodging receipts and employment. Hotels in Scottsdale employed an average of 247 workers.

— **Tom R. Rex**
Research Manager

ARIZONA ECONOMIC INDICATORS

	Month or Quarter	Value	Percent Change from Previous Period	Percent Change from Year Ago	Year-to-Date Value	Year-to-Date Percent Change from Year Ago
GROSS STATE PRODUCT						
(In Billions of Dollars, at Annual Rate)						
Arizona - Current Dollars	4th Qtr.	43.266	9.1	13.2	NA	NA
Arizona - 1972 Dollars	4th Qtr.	20.945	5.0	13.0	NA	NA
CONSUMER PRICE INDEX						
(1977 = 100)						
Metropolitan Phoenix	1st Qtr.	187.8	1.8	5.9	NA	NA
INDEX OF LEADING ECONOMIC INDICATORS (1977 = 100)						
Arizona	April	123.2	0.1	1.9	NA	NA
BUILDING PERMITS						
(Total Dollar Value in Thousands)						
Maricopa County	March	318,880	−12	− 6	1,034,366	8
Pima County	March	72,981	3	11	202,424	1
Balance of State	March	53,957	36	−19	141,004	−16
Arizona	March	445,818	− 5	− 6	1,377,794	4
TOTAL HOUSING UNITS AUTHORIZED						
Maricopa County	March	5,017	−10	−18	15,776	− 5
Pima County	March	1,238	5	−13	3,688	−21
Balance of State	March	1,502	29	18	3,761	2
Arizona	March	7,757	− 2	−12	23,263	−7
HOME SALES						
Maricopa County - Number	April	5,745	38	− 8	16,603	−14
Maricopa County - Median Price	April	72,000	0.8	2.9	71,700	2.9
ELECTRICAL POWER SALES						
(In Millions of Kilowatt Hours)						
Arizona	April	2,600.4	0.3	10.6	10,453.6	9.5

NA = Not Applicable

Source: Bureau of Business and Economic Research, College of Business, Arizona State University.

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Economic Forecasts: Valuable Despite Large Errors

Economic forecasters have been criticized in recent years for the relative inaccuracy of their predictions. From quantitative analyses of forecast error, analysts have concluded that annual forecasts are more accurate than quarterly forecasts and that no forecaster is consistently more correct than any other. Consensus forecasts (the average of many forecasts) and the forecasts of major econometric services appear to have been equally accurate in recent years.

Well-known econometric services include Data Resources, Inc., Chase Econometrics, and Wharton Econometric Forecasting Associates. Robert Eggert's monthly *Blue Chip Economic Indicators* and the quarterly survey conducted by the American Statistical Association and the National Bureau of Economic Research are examples of consensus forecasts.

FORECAST ACCURACY

The forecasting record of the *Blue Chip Economic Indicators* is representative of the accuracy of the best professional forecasters. The first annual prediction made by this group was for 1977; quarterly prognostications began in 1978. The average er-

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Electricity, Gasoline Lead 1.6 Percent CPI Increase

Prices of goods and services in the Phoenix metropolitan area rose 1.6 percent during the second quarter, an increase comparable to that of most recent quarters (see Table 1). The second quarter, 1985, index – 190.8 on a 1977 = 100 base – is 6.0 percent higher than it was one year earlier.

COMPONENT INDEXES

Two items were responsible for nearly two-thirds of the second quarter advance: Electricity rates rose 8.5 percent due to a switch to the summer rate schedule, and gasoline prices jumped 11.5 percent.

Food and Beverages

After a greater increase last quarter, which was largely seasonal in nature, food and beverage price gains returned to the moderate pace of recent quarters. Grocery store prices rose just 0.6 percent,

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ror of the consensus forecast made between October and January has been 1.2 percentage points for the Gross National Product (GNP), which is the most important economic measure to most users of forecasts. At first glance, such a record is impressive — after all, is the difference between a 3 percent and 4.2 percent rate of growth really important in making business decisions?

Unfortunately, the accuracy of the forecast has varied by year and, frequently, has been worse at just those times when a prognosis is most important — near a turning point in the economic cycle. For example, after accurately predicting the 1980 recession, the consensus in October 1981 forecast a 1982 GNP *gain* of 2.2 percent. Not until February 1982 did the consensus expect that GNP would contract that year. However, a long, severe recession had begun in October 1981 and extended throughout 1982; GNP *contracted* 2.1 percent during 1982.

Quarterly forecasts have been much more inaccurate than annual outlooks. Robert Eggert once warned his readers that "[quarterly] forecasts may be hazardous to your economic wealth." The average error of the GNP forecast for the same period of the following year (e.g., a forecast made during the first quarter, 1985, for the first quarter, 1986) has been more than four percentage points. Large error is not surprising; such a forecast is akin to predicting that the high temperature two weeks from today will be exactly 97 degrees.

The average error of the quarterly forecast made at the beginning of a quarter has been nearly as large. This magnitude of error is the difference between the historical average GNP growth of 3 percent and a recessionary decline. In fact, the consensus has incorrectly predicted an expansion or contraction in GNP in more than one-third of all quarters. Not until a quarter has ended has the average error fallen to two percentage points.

REASONS FOR THE INACCURACY

Forecasters use a combination of methods to develop a typical forecast. They usually place the greatest importance on the output of an econometric model as well as on their own judgment. Each method has its drawbacks.

An econometric model depends on historical relationships. If these relationships change, or a new phenomenon develops, output from the model is likely to be inaccurate. Such changes in economic relationships have become increasingly common since the 1960s. Further, the economy is becoming more complex, making it difficult to adequately represent all relationships in a quantitative model.

Thus, judgment is used to fill the gaps in a model. However, since economic theory frequently is not available to explain new economic developments and because human nature plays an important role in many economic processes, even the judgments of experts are frequently faulty.

The recovery from the 1982 recession exemplifies how the best economic models and judgment can be wrong. In 1982, most forecasters expected a sluggish recovery, largely because inflation-adjusted interest rates were at record-high levels; this was expected to discourage individuals and businesses from borrowing at a typical pace. Instead, the recovery was remarkably normal.

No precedent and an inability to predict human behavior led to the inexact prognosis. A large pent-up demand created by three years of recession, combined with a belief that both the inflation rate and interest rates would rise, led businesses and individuals to borrow heavily even though, from a historical perspective, such action was financially irrational.

VALUE OF FORECASTS

These inherent problems and the resulting poor forecasting record have not quelled the demand for economic forecasts. Because the economy is so cyclical, business success almost requires that forecasts be considered. No other method of forecasting has proven to be superior to the combination of judgment and econometric models used by most prognosticators, at least for annual outlooks. Alternative predictions that assume tomorrow will be like today or that tomorrow will be similar to an extrapolation of yesterday and today are not accurate in a cyclical environment. Even forecasts derived from sophisticated statistical techniques have been less exact than those that spring from the traditional combination of judgment and models.

Conventional economic forecasts, therefore, are valuable, but their poor track record makes it advisable to consult more than one forecast and not to be completely dependent on any one. Knowing the assumptions behind each forecast makes it possible to place more weight on those forecasts derived from assumptions that are in line with a user's own views.

AN ALTERNATIVE

The inaccuracy of conventional economic forecasts, coupled with the value of forecasts, illustrates the desirability of developing alternative forecasting techniques. One alternative method of forecasting GNP, presented in this article, is more accurate than the best conventional forecasts and is so simple that it can be performed by anyone in less than five minutes. Most important, this method has not failed to predict turning points, accurately forecasting each recession and recovery since the early 1970s.

While the Bureau of Business and Economic Research did not invent this method for forecasting annual GNP, it has enhanced the technique's accuracy and extended it to forecast quarterly GNP and annual and quarterly Gross State Product (GSP). This method is based on the strong correlation between the GNP and percent changes in the national Index of Leading Economic Indicators and a similar relationship between GSP and the Arizona Index of Leading Economic Indicators.

Annual GNP Forecast

The 12-month percent change in the leading index correlates highly with the rate of growth in the GNP of the following year; e.g., the percent change in the leading index from December 1983 to December 1984 was used to predict the 1985 GNP. The relationship is nonlinear, as illustrated in Figure I.

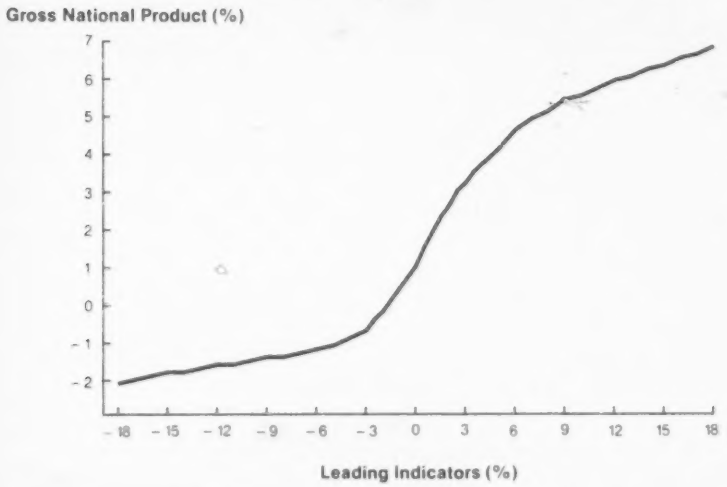
The most accurate forecast results from the December leading index (see Table 2), which is available in preliminary form by February 1 and in revised form one month later. Accurate forecasts can also be derived from the October and November leading indexes. However, the correlation between GNP and the September (or earlier) leading indexes is not high enough to produce an accurate forecast; a shortcoming of this technique, then, is that it cannot be applied prior to December 1, the date the October index is released.

Making the GNP forecast involves just two steps: (1) On December 1, the percent change is calculated between the October leading index and that of the preceding October; (2) Table 1 is used to compare this percent change with that of the GNP. The same methodology would be applied when the November and December indexes are released. The forecast using the revised December index is usually so accurate that it need not be revised until the actual GNP for the third quarter becomes available.

Since 1970, error in the GNP forecast made from the leading indicators has exceeded one percentage point only in 1971; however, the methodology was not as accurate prior to 1970. The average error of this forecast has been roughly one-half that of the *Blue Chip* consensus, as illustrated in Table 3.

If a forecast is needed prior to December, a conventional source such as the *Blue Chip Economic Indicators* should be consulted; the average error of this group has been approximately the same in August or September as in December or January. Beginning on the first of December, the forecast derived from the leading indicators is superior. Of course, complete faith should not be placed in any single forecast, especially in one made mechanically.

FIGURE I
RELATIONSHIP OF THE ANNUAL CHANGE IN THE NATIONAL INDEX OF LEADING ECONOMIC INDICATORS TO THE ANNUAL CHANGE IN GROSS NATIONAL PRODUCT



Source: Bureau of Business and Economic Research, College of Business, Arizona State University

TABLE 1
FORECASTED CHANGE IN ANNUAL GROSS NATIONAL PRODUCT
(Given Various Levels of One-Year Change in the National Index of Leading Economic Indicators)

Leading Indicators	GNP Forecast	Leading Indicators	GNP Forecast
18.0%	6.8%	- 0.5%	0.7%
17.0	6.6	- 1.0	0.4
16.0	6.5	- 1.5	0.1
15.0	6.3	- 2.0	- 0.2
14.0	6.2	- 2.5	- 0.4
13.0	6.0	- 3.0	- 0.7
12.0	5.9	- 3.5	- 0.8
11.0	5.7	- 4.0	- 0.9
10.0	5.5	- 4.5	- 1.0
9.0	5.4	- 5.0	- 1.1
8.0	5.1	- 6.0	- 1.2
7.0	4.9	- 7.0	- 1.3
6.0	4.6	- 8.0	- 1.4
5.0	4.1	- 9.0	- 1.4
4.5	3.9	- 10.0	- 1.5
4.0	3.7	- 11.0	- 1.6
3.5	3.5	- 12.0	- 1.6
3.0	3.2	- 13.0	- 1.7
2.5	3.0	- 14.0	- 1.8
2.0	2.6	- 15.0	- 1.8
1.5	2.3	- 16.0	- 1.9
1.0	1.9	- 17.0	- 2.0
0.5	1.5	- 18.0	- 2.1
0.0	1.0		

Source: Bureau of Business and Economic Research, College of Business, Arizona State University.

Quarterly GNP Forecast

The leading indicators can also be used to forecast quarterly GNP. While the average error is quite large, it is more precise than conventional forecasts. Error in the forecast made at the beginning of the quarter has averaged just less than three percentage points, compared to an error of nearly four percentage points in the *Blue Chip* consensus. The leading indicators method also more accurately predicts whether the GNP will expand or contract.

Use of any quarterly forecast involves considerable risk. The inaccuracy is so large that prior to the beginning of a quarter, when the leading index approach is wholly unsatisfactory, an educated guess will do nearly as well as any other method. For example, the Bureau used a probability-weighted random number as its GNP forecast. (While selected randomly, if a 3 percent increase, for example, historically had occurred more frequently than a 2 percent decline, then a 3 percent increase more likely would be selected as the probability-weighted random number.) The average error of this random number forecast was five percentage points, compared to an error of slightly more than four percentage points in the *Blue Chip* consensus for a quarterly GNP six to twelve months distant. An educated adjustment to the random number — such as changing a – 3 percent forecast to a positive value early in a recovery — probably would reduce the error to a level comparable to the *Blue Chip* consensus.

At the beginning of a quarter, the leading indicators method provides the best forecast. For example, on the first of January, the annualized

TABLE 2
ACCURACY OF GNP FORECAST FROM THE INDEX OF LEADING ECONOMIC INDICATORS

	Actual GNP	Forecast: October Index*	Forecast: November Index	Forecast: December Index	Forecast Error: October	Forecast Error: November	Forecast Error: December
1970	-0.2%	1.4%	0.2%	-0.3%	1.6	0.4	-0.1
1971	3.4	-1.2	-0.9	0.0	-4.6	-4.3	-3.4
1972	5.7	5.6	5.7	5.5	-0.1	0.0	-0.2
1973	5.8	5.9	5.8	5.8	0.1	0.0	0.0
1974	-0.6	1.2	1.5	-0.2	1.8	2.1	0.4
1975	-1.1	-1.7	-1.8	-1.8	-0.6	-0.7	-0.7
1976	5.4	5.0	5.6	5.9	-0.4	0.2	0.5
1977	5.5	5.2	5.4	5.4	-0.3	-0.1	-0.1
1978	5.0	5.0	4.6	4.6	0.0	-0.4	-0.4
1979	2.8	3.8	3.8	3.4	1.0	1.0	0.6
1980	-0.3	-1.0	-1.1	-1.0	-0.7	-0.8	-0.7
1981	2.5	1.5	2.9	2.5	-1.0	0.4	0.0
1982	-2.1	-0.9	-1.0	-1.1	1.2	1.1	1.0
1983	3.7	2.0	2.5	3.5	-1.7	-1.2	-0.2
1984	6.8	6.7	6.6	6.5	-0.1	-0.2	-0.3
1985	NA	1.9	2.4	1.5	NA	NA	NA
Average Error, Independent of Sign					1.0	0.9	0.6
Average Error, 1972-84 Only					0.7	0.6	0.4

*Use of the October index would allow a forecast to be made at the beginning of December.

Source: Bureau of Business and Economic Research, College of Business, Arizona State University.

percent change is computed between the August and November leading indexes. This change is then inserted into the formula: quarterly GNP forecast = 2.3 + .22 times the change in the leading index (the best straight-line relationship derived from a simple regression).

After a quarter is underway, consensus forecasts or forecasts from econometric services are most accurate. However, even after a quarter has ended, their forecasts remain relatively imprecise.

Annual GSP Forecast

The Arizona GSP can be predicted from the Arizona Index of Leading Economic Indicators in a manner similar to that used to forecast GNP from the national index. Unfortunately, the magnitude of the error in the annual GSP forecast is approximately three times that in the GNP forecast. While more rapid growth of GSP partially explains the large error, it is also due, in part, to greater deviation in the Arizona data. The average annual error has been approximately two percentage points, but it exceeded five percentage points in both 1974 and 1976. Further, the 1974 recession was not foreseen.

While the size of these errors reduces the value of making annual GSP forecasts from the leading indicators, the method is generally free of error in predicting whether the GSP change will be greater or smaller than that of the prior year. In the Arizona leading index, the percent change from October to October most accurately predicts the GSP of the following year. If this 12-month change is larger than the comparable change in the leading index of the prior year, the GSP of the following year is also likely to be greater than in the current year. Through these means, the leading index approach helps to determine the Bureau's forecast for the Arizona economy.

Quarterly GSP Forecast

The average error in forecasting quarterly GSP from the Arizona leading index has been too large, at 4.5 percentage points, to make this method practical to use. However, it accurately predicted whether the GSP would expand or contract in 80 percent of the quarters. Similarly, the method correctly foresees whether the change in GSP will be larger or smaller than in the prior quarter. Thus, the Arizona leading index is of value in assessing current economic conditions.

1985 FORECAST

Using the December-to-December change in the national leading index, the annual GNP forecast for 1985 was just 1.5 percent. As seen in Table 2, however, an unusually large variation existed in the forecasts derived from the October, November and December indexes. While the December forecast of 1.5 percent appears too low — to be accurate, a recession would be required during the last two quarters of 1985 — the November forecast of 2.4 percent is more feasible. Given the 0.3 percent growth of the first quarter and the flash estimate of a 3.1 percent gain during the second quarter, GNP growth of 1.5 percent in each of the

TABLE 3
ACCURACY OF GNP FORECASTING METHODS
Blue Chip Economic Indicators Compared to the Index of Leading Economic Indicators

	Actual GNP	Forecast on January 1: Blue Chip	Forecast on January 1: Leading Indicators*	Forecast Error: Blue Chip	Forecast Error: Leading Indicators
1977	5.5%	5.1%	5.4%	-0.4%	-0.1%
1978	5.0	4.3	4.6	-0.7	-0.4
1979	2.8	2.1	3.8	-0.7	+1.0
1980	-0.3	-1.0	-1.1	-0.7	-0.8
1981	2.5	0.7	2.9	-1.8	+0.4
1982	-2.1	0.3	-1.0	+2.4	+1.1
1983	3.7	2.5	2.5	-1.2	-1.2
1984	6.8	5.3	6.6	-1.5	-0.2
1985	NA	3.3	2.4	NA	NA
Average Error, Independent of Sign				1.2	0.7

*Uses percent change for the 12 months ending in November.

Source: Bureau of Business and Economic Research, College of Business, Arizona State University; and Robert J. Eggert, *Blue Chip Economic Indicators.*

last two quarters would result in annual average growth of 2.4 percent. In contrast, to reach the 3.3 percent gain predicted by the *Blue Chip* panel in early January, the economy would have to grow an unlikely 6 percent throughout the last two quarters.

The Arizona leading index shows that growth in the GSP should decline sharply in 1985, but this is not surprising, considering the record expansion of 14.4 percent during 1984. The best estimate is 5.8 percent, but a wide range between 3.8 percent and 7.8 percent must be considered. The official Bureau forecast of 7.2 percent takes into consideration other information, particularly output from the econometric model.

Although first quarter figures are not available at this writing, the leading index methodology suggests that Arizona's GSP increased more rapidly than the 4.6 percent gain of the fourth quarter, 1984. The second quarter's increase probably was larger than that of the first quarter. The change in the leading index between February and May suggests that the GSP will expand much less rapidly during the third quarter.

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with advances most apparent in the fruits and vegetables category, due to large increases in fresh fruit prices (see Table 2). In contrast, the index for meats, poultry, fish, and eggs declined due to lower prices for beef, pork, other meats, poultry and eggs. The price of eggs was 21 percent below the level of one year earlier.

Housing

Housing costs again rose moderately despite the large seasonal increase in electricity rates, which were just 3.1 percent higher than they were one year earlier. Renters' costs rose 1.3 percent and homeowners' costs advanced 0.9 percent. The index for household furnishings and operations declined slightly, following a large gain last quarter.

Transportation

A surge in gasoline prices kept this category rising at a rate faster than that of the overall index; the gain during the last year, 8.2 percent, was larger than that of any major category except medical care. A 9.7 percent jump in vehicle insurance rates and a fee increase for auto registration also contributed to the advance in the transportation index. Partially offsetting these factors were declines in several subcategories: New car prices declined, following a large gain last quarter; used car prices dropped for the second consecutive quarter, following a long period of large gains; and prices for public transportation, vehicle parts and equipment, and vehicle maintenance and repair all fell.

Medical Care

The 1.3 percent increase in medical care costs was the lowest in a year. Hospital costs were again stable, marking the sixth consecutive quarter of almost no change. Health insurance premiums rose just 0.7 percent, the least in three years. A moderate boost in fees for professional services

Metro Phoenix CPI

The Metropolitan Phoenix Consumer Price Index (CPI), on which these inflation figures are based, is prepared by the Bureau of Business and Economic Research in the College of Business, Arizona State University. Comprehensive pricing surveys are conducted each quarter by the Bureau in cosponsorship with Valley National Bank.

TABLE 1
PERCENT CHANGES IN
METROPOLITAN PHOENIX CONSUMER PRICE INDEX

		Percent Change from Preceding Quarter					
Expenditure Category	*Relative importance*	*1st 1984*	*2nd 1984*	*3rd 1984*	*4th 1984*	*1st 1985*	*2nd 1985*
ALL ITEMS	100.00	1.9	1.5	1.7	0.7	1.8	1.6
Food and Beverage	19.0	1.8	0.7	1.0	0.2	2.6	1.1
Housing	38.9	0.6	2.0	2.3	-0.1	1.2	1.4
Apparel and Upkeep	4.8	2.5	-1.3	-0.1	0.4	2.2	3.1
Transportation	21.7	1.6	2.3	1.2	2.2	1.7	2.8
Medical Care	6.6	11.4	1.1	3.0	2.7	3.4	1.3
Entertainment	4.6	1.1	2.3	2.6	0.3	4.6	0.2
Other Goods and Services	4.3	0.8	1.1	2.1	1.2	1.4	1.7

TABLE 2
METROPOLITAN PHOENIX CONSUMER PRICE INDEX
Second Quarter, 1985
(1977 = 100)

Expenditure Category	*Last Qtr. Index*	*This Qtr. Index*	*Percent Change*	*Year-Ago Change*
ALL ITEMS	187.8	190.8	1.6	6.0
Food and Beverages	170.3	172.2	1.1	4.9
Food	171.2	173.0	1.0	4.8
Food at Home	169.5	170.6	0.6	4.8
Cereal and Bakery Products	183.3	186.5	1.7	8.5
Meats, Poultry, Fish, and Eggs	161.8	157.9	-2.4	1.2
Dairy Products	158.6	160.1	0.9	2.6
Fruits and Vegetables	182.5	189.1	3.6	10.4
Other Food at Home	157.4	159.5	1.4	4.4
Food Away from Home	171.8	174.9	1.8	5.1
Housing	195.0	197.7	1.4	4.8
Shelter	209.2	210.8	0.8	5.5
Renters' Costs**	112.9	114.4	1.3	7.3
Homeowners' Costs**	105.1	106.0	0.9	4.0
Fuel and Other Utilities	166.5	175.9	5.7	0.9
Gas (piped) and Electricity	180.4	195.7	8.5	-0.6
Household Furnishings and Operations	151.3	150.7	-0.4	5.6
Apparel and Upkeep	143.4	147.9	3.1	5.6
Transportation	186.7	191.9	2.8	8.2
Private Transportation	183.3	189.4	3.3	8.4
New and Used Cars	200.0	194.1	-3.0	4.6
Motor Fuels	193.5	215.7	11.5	7.3
Public Transportation	242.4	232.6	-4.0	5.0
Medical Care	248.2	251.4	1.3	10.8
Entertainment	180.1	180.4	0.2	7.8
Other Goods and Services	168.5	171.4	1.7	6.6

An ** indicates that the base period is second quarter, 1983.

Source (Tables 1 and 2): Bureau of Business and Economic Research, College of Business, Arizona State University, in cosponsorship with Valley National Bank.

and another large gain in prescription drug prices were primarily responsible for the advance in the medical care index.

Other Categories

The index for apparel and upkeep jumped a large 3.1 percent, but gains for other goods and services and for entertainment were more moderate. Prices of newspapers and magazines, again rising sharply, were 31.6 percent higher than they were one year earlier.

COMPARISON AREAS

The Phoenix metropolitan area continued to experience the highest inflation rate in the nation, with San Diego's 5.3 percent annual gain the next highest rate. Compared to San Diego, inflation in Phoenix was higher in every major category except housing (see Table 3).

On a more optimistic note, the increase during the second quarter in the Phoenix area was not substantially higher than the national average. The widest disparity occurred in the food and beverages category.

OUTLOOK

The inflation rate, both in Phoenix and nationally, remains remarkably stable, especially for a stage of the economic cycle when inflation generally accelerates. There is little sign that the situation will soon change; the probability is increasing that rates will remain stable until the next economic downturn or until government action is taken that affects the strength of the dollar and the volume of imports entering the country.

In the Phoenix area, the primary causes of higher inflation have changed. While much of the deviation between the Phoenix and national inflation rates during 1984 could be traced to large advances locally in specific items such as health insurance and used car prices, these items have contributed little to inflation in recent quarters. However, temporary inflationary surges in various items, such as the jump in gasoline prices during the second quarter, have kept the Phoenix inflation rate at a relatively high level. Since a widespread acceleration in inflation is now considered unlikely, whether the Phoenix inflation rate remains relatively stable or declines will depend on a continuation of these short-term inflationary surges.

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TABLE 3
METROPOLITAN PHOENIX CONSUMER PRICE INDEX
UNITED STATES AND COMPARATIVE CITIES
Second Quarter, 1985

	Percent Change from Last Quarter		Percent Change from One Year Ago			
Expenditure Category	*Phoenix*	*United States*	*Phoenix*	*United States*	*Denver*	*San Diego*
ALL ITEMS	1.6	1.2	6.0	3.7	2.9	5.3
Food and Beverages	1.1	– 0.1	4.9	2.5	1.8	3.1
Housing	1.4	1.4	4.8	4.1	3.0	7.3
Apparel and Upkeep	3.1	1.7	5.6	3.2	4.0	3.6
Transportation	2.8	2.3	8.2	2.9	2.4	3.9
Medical Care	1.3	1.4	10.8	6.0	7.7	4.1
Entertainment	0.2	0.9	7.8	4.0	– 1.0	4.4
Other Goods and Services	1.7	0.6	6.6	6.3	5.8	6.5

Source: Metropolitan Phoenix data compiled by the Bureau of Business and Economic Research, College of Business, Arizona State University, in cosponsorship with Valley National Bank; other data is from the U.S. Department of Labor, Bureau of Labor Statistics.

Censuses of Manufacturing, Mining, Construction

Industry Characteristics, Economic Impact Revealed

Arizona results are now available from the six economic censuses conducted by the U.S. Bureau of the Census at the end of 1982. Articles in previous issues of *Arizona Business* reviewed the Census of Retail Trade, Census of Wholesale Trade and Census of Service Industries. This article discusses the Census of Manufactures, Census of Construction Industries and Census of Mineral Industries.

MANUFACTURING

At the end of 1982, 3,407 manufacturing establishments operated in Arizona, an increase of 18 percent since the previous census in 1977. The number of workers employed by manufacturing firms rose more rapidly — by 35 percent, to 149,800 in 1982. Despite these gains, manufacturing remained a smaller component of the Arizona economy than of the national economy, with the state's manufacturing employment total accounting for just 0.8 percent of the nation's total.

Employment

Most Arizona manufacturing firms were relatively small; nearly 75 percent employed fewer than 20 workers, and only 6 percent employed more than 100 people. The average payroll per employee was $20,300 in 1982, with the average value added per employee reaching $41,100.

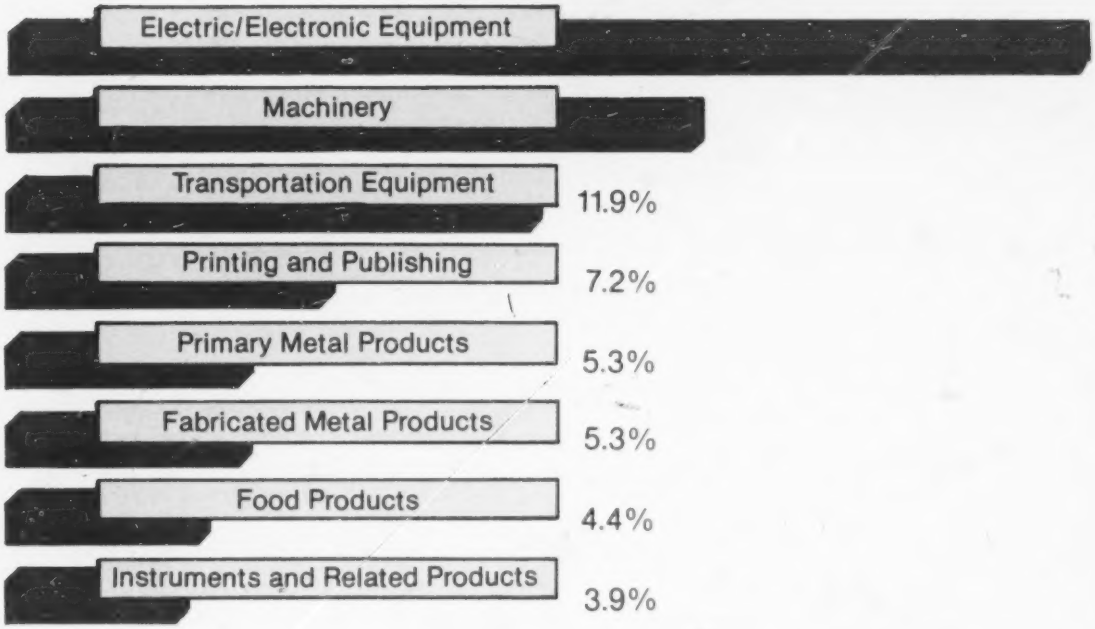
Economic Contribution

The total value added by manufacturing reached $6.2 billion. Combined with the cost of materials, the total value of shipments was $12.9 billion, an inflation-adjusted increase of approximately 15 percent since 1977. The manufacturing industry's contribution to the Arizona economy, measured by the Gross State Product (GSP), totaled $5.2 billion in 1982. It reached $6.9 billion in 1984.

Location of Firms

Establishments located in the Phoenix metropolitan area accounted for roughly 70 percent of the state's

FIGURE I
SHARE OF MANUFACTURING EMPLOYMENT, 1982
MAJOR ARIZONA MANUFACTURING INDUSTRIES



Source: U.S. Bureau of the Census, 1982 Census of Manufactures

manufacturing firms, employees, and value added. The city of Phoenix was home to 1,417 establishments (42 percent of the total), dwarfing the number in Tempe (318), Scottsdale (159) and Mesa (150). The remainder of the state's manufacturing establishments were split evenly between locations in the Tucson metropolitan area and in the rural counties.

Types of Manufacturer

The manufacture of electric and electronic equipment was Arizona's largest manufacturing industry in 1982, when measured by employment or value added. Other major industries included the manufacture of non-electrical machinery and transportation equipment (see Figure I). In terms of number of establishments, however, the printing and publishing industry was dominant, accounting for 18 percent of all manufacturing establishments.

High technology manufacturing garners considerable attention, but this term has several definitions. Commonly, the high tech category includes portions of several manufacturing industries — machinery, electric and electronic equipment, transportation equipment, and instruments and related products — including those industries that are most important to Arizona.

The state also experienced significant levels of high technology manufacturing of office and computing machines; electronic components and accessories, which include semiconductors; aircraft and parts; and guided missiles, space vehicles and parts. These manufacturing sectors, together with the instruments sector, accounted for only 8 percent of Arizona's manufacturing establishments in 1982, while employing more than one-third of the manufacturing workers and producing more than one-third of manufacturing value added.

These high tech sectors have also been among Arizona's most rapidly growing. For example, employment in the office and computing machines sector more than doubled between 1977 and 1982.

MINING

Only 38 percent of the 291 mining establishments operating in Arizona during 1982 listed metal mining as their major activity. Nearly as many firms engaged in oil and gas extraction and in the mining of non-metallic minerals.

Establishments involved with metal mining tended to be much larger than those active in other mining operations. Copper mining alone employed 81 percent of all mining workers and produced 69 percent of the industry's value added. Conditions in copper mining have declined considerably since 1982, although the slump had already begun prior to the census.

Changing Conditions

Mining has always been a cyclical industry, although the current slump, due to low worldwide copper prices and foreign competition, is probably the worst the industry has faced. However, conditions in the industry may not be as bad as sometimes expressed, since comparisons are frequently made to 1981, the industry's best year, rather than to a typical year. For example, production of copper in tons during 1984 was only 11 percent less than the average of the 1970s. Mining employment, however, was 41 percent less in 1984 than the average of the 1970s, illustrating the large productivity gains realized during recent years.

Adjusted for inflation by the national Consumer Price Index, the mining industry's GSP was 16 percent less in 1984 than the average of the

1970s. The deflated price of copper was nearly 50 percent less, although price gains during the 1970s had exceeded the general inflation rate.

Economic Contribution

Thus, despite a sizable drop in employment, current mining production is not much below its typical level. However, because of large price decreases, the value of mining's output and its contribution to the state's economy have fallen by greater proportions. The industry's GSP of $1.7 billion during 1984 constituted just 4 percent of total GSP, a continuation of mining's decline in importance to the Arizona economy, which began during the 1930s.

CONSTRUCTION

An even 17,200 construction companies operated in Arizona during 1982, but only 40 percent had a payroll — the rest were single proprietorships or partnerships, which used only contract labor.

Construction is a highly cyclical industry, and the census year of 1982 marked a low point in the cycle due to the national economic recession. Thus, comparisons to the previous census taken in 1977 may be unrepresentatively low. Still, the census counted 58 percent more establishments and 22 percent more employees in 1982.

Employment/Receipts

The construction industry employed 64,689 people in 1982, an average of 9.5 workers per establishment with a payroll. In contrast, construction employment exceeds 100,000 today. The average 1982 payroll per employee was $16,200, and receipts per employee averaged $98,700. Business receipts totaled $5.95 billion; 91 percent were earned by establishments with a payroll.

Even those construction companies with a payroll were generally small. Three of four had four or fewer employees, and only 1 percent employed more than 100 people. Receipts exceeded $1 million in just 13 percent of the establishments; they totaled less than $100,000 in 35 percent of the firms.

Types of Company

The census placed companies engaged in construction into one of four categories. Of those establishments with a payroll, 26 percent were classified as general building contractors, such as single family home builders; 5 percent were grouped as heavy construction contractors, such as highway builders; two-thirds were categorized as special trade contractors, such as those engaged in electric work; and 2 percent were grouped as subdividers and developers not elsewhere classified.

Large firms were more common among heavy construction contractors with a payroll. They included just 5 percent of the construction establishments but employed 12 percent of the workers and produced 19 percent of the $2.2 billion value added. In contrast, small establishments predominated among special trade contractors.

Metro Phoenix Concentration

The metropolitan Phoenix area contributed 60 percent of the state's construction establishments and two-thirds of both construction employment and construction receipts during 1982.

— Tom R. Rex
Research Manager

Arizona Leading Index Revised; Still Signals Inconsistent Growth

The Arizona Index of Leading Economic Indicators declined 0.3 percent in May 1985 to 104.4, down from a revised index of 104.7 in April (1977 = 100). The large revision to the April index, originally reported as 123.2, resulted from several methodological enhancements to the index, discussed later in this article.

May's decline was the third in a row since the February 1985 peak of 105.2 (see Figure I). The total three-month dip of 0.8 percent does not satisfy the decision rule for predicting an upcoming recession. In fact, the declines come on the heels of the strongest gains in the index — from November 1984 through February 1985 — since summer 1983. Thus, recent decreases should be interpreted as signals that the Arizona economy never fully escaped the inconsistent, slow growth that began last summer, despite index advances during the winter.

The diffusion index (the percentage of increasing components) slid to only 25 percent in May, demonstrating widespread weakness in the economy. Only the national money supply (M2) and national prices of sensitive raw materials increased. The gain in M2 followed a rare two-consecutive-month decline.

Average hours worked in the manufacturing industry dropped sharply in May, a major downward influence on the index. The purchased materials inventory level also fell, representing inventory liquidation that probably will slow future economic growth.

ENHANCEMENTS

Two methodological changes, as well as data revisions to the national money supply, were incorporated into the May index, resulting in a revision to the entire time series. The improvements created little noticeable effect, except that the relative level of the index declined by approximately 20 index points. (The relative magnitude of the index has no meaning, since the index was not designed to measure growth over a long period of time.)

The first enhancement removed the three-month moving average, which had been used to reduce the number and size of erratic monthly changes in the index. By virtue of its construction, a moving average lags behind the latest developments. For example, the national money supply (M2) declined in March, but its contribution to the original March Arizona index was positive because of large increases in January and February. The national leading index also does not use a moving average.

To reduce the large, monthly countercyclic changes introduced by re-

moval of the moving average, equal weighting of index components was also eliminated. Certain components, particularly average hours worked in the manufacturing industry, have substantially more erratic changes, or "noise," than others. A weighting scheme, similar to that used in the national index, had been employed to reduce the weights of those components that suffered from deficiencies in such factors as smoothness, conformity and timing. The revised Arizona leading index is less smooth than the original index, but countercyclic monthly changes are isolated and relatively small in magnitude. In essence, a degree of smoothness was sacrificed for timeliness and greater lead time.

The decision rule discussed in the April 1985 *Arizona Business* remains essentially the same for the revised index. To predict a recession, the index must decline for at least two successive months by a total of at least 1.5 percent; subsequent gains in the index cannot reduce the net decrease to less than 1.5 percent. The same rule is applied to gains in the index to predict recovery from a recession. Use of this decision rule for the revised index results in an average lead time approximately one month longer than in the original index, due to the removal of the moving average. A recession can be recognized an average of seven months prior to its onset; the lead time has varied between four and ten months in the last three cycles. Lead time for a recovery is shorter — just one month — and has ranged from one to three months during the last four cycles.

Use of a diffusion index to aid interpretation of the leading index was discussed in the May 1985 *Arizona Business*. In the revised index for an expansionary period, the proportion of components with a positive net contribution is at least 60 percent in two-thirds of all months. In contrast, the diffusion index reads 40 percent or less in two-thirds of all months during a contractional period.

The diffusion index's value is illustrated by the interpretation of index changes in recent months. During the 10 months from January through October 1984, the index exhibited small, erratic monthly changes that netted virtually zero change. Then, the index rose by moderate amounts for four consecutive months, from November 1984 through February 1985. Instead of interpreting these gains as an end to the stagnant period, the diffusion index allowed a more cautious interpretation since it reached 60 percent in just one of the four months. The stronger gains during those four months resulted almost entirely from large increases in the money supply.

FIGURE I
ARIZONA INDEX OF LEADING ECONOMIC INDICATORS

Source: Bureau of Business and Economic Research, College of Business, Arizona State University

CRITICISM OF THE NATIONAL INDEX

The accuracy of the national Index of Leading Economic Indicators has come under increasing attack in recent months. As is typically the case in such situations, the arguments, while having some merit, have become exaggerated and inaccurate.

Generally, the national index is revised every few years. The last comprehensive review was completed in 1975, although some changes were made earlier this decade. Another complete review probably should be made. For example, the stock market component of the index has not been a consistently accurate leading indicator during the last 10 years. However, such problems tend to be minimized in an index that comprises 12 components.

An empirical review of the national index suggests that it has been generally accurate. Since May 1984, the index has exhibited erratic changes that have netted virtually no change. Shortly after these erratic changes began, growth of the national economy also became inconsistent and slow.

TABLE 1
NET CONTRIBUTION OF INDIVIDUAL COMPONENTS TO THE ARIZONA INDEX OF LEADING ECONOMIC INDICATORS

	Net Contribution +		
	March	*April*	*May*
Delivery Time*	– .06	.04	– .05
Inventory Levels*	.02	.05	– .15
New Orders*	.01	– .06	– .01
Production*	– .04	.02	– .05
Employment*	– .01	.04	– .02
Residential Building Permits	– .08	– .09	– .04
Unemployment Insurance Claims	.03	– .17	.01
Average Workweek, Manufacturing	– .11	.12	– .24
Money Supply	– .09	– .24	.27
Change in Sensitive Materials Prices	– .04	.08	.10
OVERALL INDEX	– .37	– .21	– .18

+ The net contribution of each component is calculated by multiplying the monthly change in its index by its relative importance.

*Based on indicators from the purchasing management associations of Arizona and southern Arizona.

Source: Bureau of Business and Economic Research, College of Business, Arizona State University.

Thus, during the last year, the index accurately warned of slower, inconsistent growth that would not deteriorate into a recession.

With its similarities to the national index, the Arizona index might also be open to certain criticisms. However, performance of the indexes suggests that such arguments are relatively unimportant; the indexes are performing as designed.

OUTLOOK

After a spell of negative economic news caused increasing pessimism among economists, recent economic reports, such as the flash estimate of second quarter GNP, have been more positive. Included among the good news was a gain in the national Index of Leading Economic Indicators in May, following two successive declines. Continuing fluctuations in the national and Arizona leading indexes suggest that the economy remains on an erratic course, with neither a recession nor an upswing in sight.

An alternative to the national leading index, the ratio of the coincident index to the lagging index, also signals a continuation of unstable conditions. This ratio normally signals a slowing of economic growth more clearly than the official leading index. Thus, although this ratio declined in 12 of 16 months through May 1985, by a total of more than 8 percent, it is only foreseeing a slow economy.

In Arizona, conditions ir some ways appear similar to those of the late 1970s. The Arizona index since December 1983 has behaved similarly to its performance during the period that began in October 1977 (see Table 2). In 1977-78, the index rose just 0.8 percent during the 13 months preceding its peak value of 101.9 in November 1978. In 1984-85, the index increased only 1.4 percent during the 14 months preceding its peak value of 105.2 in February 1985. By mid-1979, the index was declining more rapidly, signaling the 1980 recession. Thus, if this pattern continued to repeat during 1985, the index would begin a definite slide within the next few months, signaling a recession to begin approximately during the second quarter of 1986.

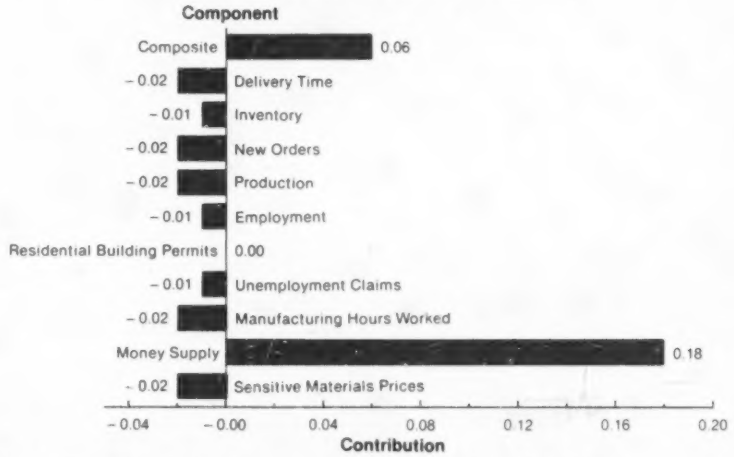
Such a continuation of this pattern is far from certain, however, since index components are behaving in an opposite way to their movements during the late 1970s. During that cycle, residential building permits and money supply led the decline. During the current cycle, these two are the only components not to decline (see Figure II).

In fact, the drop in interest rates that began late in May may stimulate the economy during coming months. The leading index should reflect any stimulus within the next month or two. Thus, the chance of a recession remains as uncertain as before.

In the last issue of *Arizona Business*, the Bureau presented an economic forecast that included several scenarios. As that article was written, Robert Eggert was polling 50 economists for his June issue of *Blue Chip Economic Indicators*. Their quarterly forecasts on Gross National Product (GNP) reveal the uncertainty among economic forecasters:

- 26 percent expect that the slow, inconsistent growth will end within the current quarter, followed by moderate-to-strong growth.
- 32 percent predict that a brief

FIGURE II
ARIZONA INDEX OF LEADING ECONOMIC INDICATORS
Contribution by Component
Average, January 1984 — May 1985



Source: Bureau of Business and Economic Research, College of Business, Arizona State University

TABLE 2
PERFORMANCE OF THE ARIZONA INDEX OF LEADING ECONOMIC INDICATORS
1977-79 Compared to 1983-85

Months Later	Cumulative Change from December 1983 Index	Months Later	Cumulative Change from October 1977 Index
1	-0.1%	1	-0.2%
2	0.3	2	0.0
3	0.3	3	-0.2
4	0.4	4	-0.1
5	0.2	5	-0.2
6	0.5	6	-0.3
7	0.1	7	0.1
8	0.2	8	-0.4
9	0.3	9	0.1
10	0.1	10	-0.1
11	0.7	11	0.3
12	0.7	12	0.7
13	0.8[p]	13	1.0
14	0.7	14	1.4[p]
15	-0.4	15	1.1
16	-0.7	16	1.0
17	-0.1	17	0.7
18	-0.2		
19	-0.4		
20	-1.2		
21	-1.4		
22	-1.8		
23	-2.3		
24	-2.7		

[p] = peak value

Source: Bureau of Business and Economic Research, College of Business, Arizona State University.

upswing in growth during 1985 will deteriorate into a growth recession during 1986.
- 20 percent believe that a brief upswing during 1985 will degenerate into a true recession during 1986.
- 10 percent do not foresee any change from the slow, inconsistent growth of recent quarters.
- 12 percent forecast a recovery during 1986 from slow, inconsistent growth.

This unusually wide diversity of opinion is another indication of the great uncertainty that currently exists. Close watch of the national and Arizona leading indexes should provide one of the first definitive signs of the economy's direction.

— Tom R. Rex
Research Manager
— Luke Koons
Research Analyst

June Purchasing Indicators Reflect Sluggish Growth

The Arizona economy continued its lackluster performance in June, for the third consecutive month. Although the economy inched upward, new orders received, production, and employment all registered lower increases than in May and the smallest hikes since January. Inventory levels dropped again, due to Arizona firms reducing their excess stocks.

The growth curve flattened during the first half of the year, as the huge foreign trade deficit continued to impact manufacturing adversely. However, inflation was well under control, and interest rates declined substantially, which will have a positive effect on consumer demand and capital expenditure plans. The Arizona economy will continue to follow a sluggish growth curve during the balance of the year, mirroring the slow growth rate expected for the national economy.

Table 1 presents the results of the June survey of Arizona purchasing managers.

PRICES

Prices paid for major purchased items advanced in June, following May's level performance, although the increase was small and lower than in all but one month over the past two years. Inflation does not pose an immediate problem. As long as price gains remain on the low side, the Federal Reserve can continue to exert downward pressure on interest rates, in an attempt to breathe new life into an economic expansion now well into its third year.

DELIVERY TIME

Delivery time on shipments from vendors stretched again in June, but at a moderate rate, as has been the case for each month of 1985. This lengthening has been well under that of almost any month of the previous two years, showing that the rate of economic expansion has slowed appreciably.

INVENTORIES

Inventory levels of purchased materials dropped again, for the second consecutive month, although the decrease was small. Arizona firms are keeping a tight rein on inventories as they await more definite evidence of the economy's direction during the balance of 1985.

NEW ORDERS

New orders received in June by Arizona firms increased at a rate about the same as in April and May. The new order rate was much lower during the second quarter than in the first quarter. June's new order advance was the smallest since January.

PRODUCTION

Production rose, but the June gain was smaller than the previous month's and the lowest since December.

EMPLOYMENT

Employment increased in June, for the sixth month in a row, but the advance was less than in May and the smallest since January. Although the employment trend continued positive, payroll additions during the first half of 1985 were much smaller than those of the previous two years.

PURCHASES

Purchases of materials and supplies by Arizona firms were up, but the net increase was smaller than in May and the lowest since collection of data for this indicator began more than two years ago, in March 1983.

— Harold Fearon

Dr. Fearon is chairman of the Department of Purchasing, Transportation, Operations in the ASU College of Business and is the National Association of Purchasing Management Professor.

Arizona Purchasing Survey

Now in its 23rd year of monthly reporting, Dr. Harold Fearon's survey of Arizona business conditions utilizes data from a questionnaire sent to members of the purchasing management associations of Arizona and southern Arizona. It asks them to indicate the direction of activity — higher, unchanged, or lower — of seven key measures of economic activity in the month just ended. These purchasing managers deal daily with supply, demand, and price factors in the marketplace; their aggregate readings have accurately charted the state's economic course for two decades, providing timely data on turning points.

TABLE 1
JUNE PURCHASING SURVEY

	Percent of Purchasing Managers Indicating Each Response (June compared to May)		
Key Indicators	*Higher*	*Same*	*Lower*
Prices paid for major commodities	22	64	14
Delivery time from vendors	24	59	17
Purchased materials inventory level	27	44	29
New orders received	35	43	22
Production	32	47	21
Employment	28	52	20
Purchases	35	37	28

Source: Purchasing Management Association of Arizona and the Purchasing Management Association of Southern Arizona.